

8. The method according to Claim 7 wherein said lowering step further comprises the step of determining the increments of visually detected change of a user by providing a user interface screen on the display in which at least one oriented strip is incrementally changed in color against a color background to enable a user to detect when the strip has visually changed color from the color background by user identifying one of orientation and color of strip on the display.

9. The method according to Claim 8 wherein said strip is oriented at one of horizontal, vertical, or angled orientation.

AN 10. The method according to Claim 3 wherein said lowering step further comprises the steps of:

incrementally lowering the brightness of the display;  
measuring the color of the display with a sensor directed to the display to determine when superposition occurs; and  
repeating said incrementally lowering step and measuring color step until superposition is observed.

11. The method according to Claim 3 wherein said lowering step further comprises the steps of:

incrementally lowering the brightness of the display;  
observing by a user when the superposition of colors occurs by detection of threshold changes against a background; and  
repeating said incrementally lowering step and measuring color step until superposition is observed.

12. The method according to Claim 3 further comprising the step of:  
measuring with a sensor the screen at increments of visually detected thresholds of color changes in one or more color channels.

13. The method according to Claim 12 further comprising the steps of

performing said measuring step when said display is in ambient illumination; and performing said measuring step when said display is in an absence of ambient illumination.

14. The method according to Claim 12 wherein said calibrating step further comprises the step of determining color calibration information for said display in accordance with said measurements by said sensor.

15. The method according to Claim 3 further comprising the step of verifying the calibration of the display by comparing one or more displayed screen colors to one or more respective color references.

AN 16. The method according to Claim 15 wherein said verifying step further comprises providing a user interface screen on the display having an annular region defining a center region in which one of said color references is shaped to be located over said annular region and said screen is viewable at said center region to enable the user to change the color of the center region in one or more color channels so that the center region matches the color of the color reference.

17. The method according to Claim 16 wherein said user interface screen has different colored regions from that displayed in the center region, in which each of said different colored regions represent a color different from the center region and other colored regions in one or more color channels to enable the user by selecting one or more of the colored regions indicates the direction of color change of the center region towards the color of the color reference, and the center region color is updated in the direction representative of the selected colored region.

18. The method according to Claim 16 wherein said user interface screen has one or more slide bars representative of different changes of at least said color channels to enable the user by moving one or more of the slide bars to effect color change of the center region towards the color reference in a direction representative of the slide bars moved.

19. A method for measuring a user established white point balancing multiple color channels of a color display comprising the steps of:

- a) providing a reference for the color white;
- b) providing on the display the color white;
- c) adjusting the color channels of the display to change the color white on the display to visually match the reference; and
- d) measuring with a sensor directed to the display the adjusted color white to obtain an updated white point of the display.

AN 20. The method according to Claim 19 further comprising the step of storing the measured white point on a computer coupled to the display and sensor.

21. The method according to Claim 20 further comprising the step of updating color transformation information by the computer for displaying color in accordance with the measured white point.

22. The method according to Claim 19 further comprising the step of sharing information by said computer of the measured white point with other computers via a network coupling said computer with said other computers, in which said other computers are coupled to one or more color rendering devices and said other computers update color transformation information for said devices in response to said shared information to render color substantially the same as the color on said display.

23. The method according to Claim 19 further comprising the step of illuminating the reference while said adjusting step is carried out.

24. The method according to Claim 19 further comprising the step of verifying the white point by repeating step (b) in accordance with the measured white point, and repeating steps (c) and (d) when the white color display does not match the reference.

25. The method according to Claim 19 further comprising the step of measuring tone reproduction curves in one or more color channels on the display with said sensor.

26. The method according to Claim 25 further comprising the steps of :  
storing the measured white point and tone reproduction curves on a computer coupled to the display and sensor; and  
updating color transformation information by the computer for the display in accordance with the measured white point and tone reproduction curves.

27. A method for modeling the color of a color display having a plurality of color channels comprising the steps of:

comparing a displayed screen color to a color reference;  
changing the screen color to match the color reference;  
recording the color of screen which matches the color reference;  
measuring the displayed screen color which matches the color reference with a sensor, and storing the sensor measurement with the recorded screen color;  
repeating said comparing, changing, recording, and measuring steps with different color references; and  
modeling the relationship between the measurements and associated recorded screen color to provide normative data of the color of the screen.

28. The method according to Claim 27 further comprising the steps of:  
increasing the contrast of the display to about a maximum level for the display;  
increasing the brightness of the display for at least one color channel to about a maximum level for the display; and

lowering the brightness of the display of at least said one color channel until superposition of colors is observed.

29. The method according to Claim 28 further comprising the steps of:  
displaying at least one of the recorded screen colors;  
comparing the displayed recorded screen color with the associated color reference;

changing the display screen color when needed to match the color reference;  
recording the color of screen which matches the color reference;  
measuring the displayed screen color which matches the color reference with a sensor, and storing the updated sensor measurement with the recorded screen color; and  
updating the model when the screen color was changed to match the color reference in accordance with the stored updated sensor measurement.

30. A method for calibrating a color display comprising the steps of:  
providing a user interface screen on the display with a plurality of patches ranging from low to high gray scale values;  
comparing the displayed patches with a reference associated with said patches;  
displaying on said user interface screen indicator levels of the gray scale value of each of said displayed patches and changing the indicator levels of one or more of said patches to match the associated patches of the reference; and  
updating the calibration of the display in accordance with the values of the displayed gray scale patches when said displayed patches matches the associated patches of the reference.

31. A system of colorimetry of a sensor comprising:  
a sensor having at least one channel of spectral sensitivities which does not match the spectral sensitivity of color viewed by a human;  
a color reference defining a mixture of a plurality of colorants each providing a spectral distribution;  
said sensor measuring the color of said reference; and  
means for producing a spectrum of a mixture of said colorants by convolving the spectral sensitivities of said sensor with the spectral distribution of said colorants to provide at least one integrated spectral value, and determining when said value corresponds to said measurement by said sensor to provide color coordinates of said mixture in a Standard Observer coordinate system.

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